

Serial No. 10/712,742

**In the Claims:**

Please cancel claim 7, and 15 without prejudice.

Please amend claims 1-4, 8, 10-14, 16, and 17 as follows:

1. (currently amended) A method for implementing automated electronic package transmission line characteristic impedance verification comprising the steps of:

providing a transmission line test structure, said transmission line test structure representing conductors on a card,

providing a single integrated circuit device disposed on said card; said single integrated circuit device implementing automated electronic package transmission line characteristic impedance verification steps including;

generating a selected frequency coupled to a said transmission line test structure;

measuring an input impedance with an open-circuit termination and a short-circuit termination on said transmission line test structure;

using said input impedance measured value for said open-circuit termination and said short-circuit termination, calculating characteristic impedance; and

comparing said calculated characteristic impedance with threshold values for verifying acceptable electronic package transmission line characteristic impedance.

2. (currently amended) A method for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 1 includes the steps of providing a pair of said transmission line test structures

respectively implemented at a package level with a open-circuit termination and a short-circuit termination.

3. (currently amended) A method for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 2 wherein the steps of measuring said input impedance with said open-circuit termination and said short-circuit termination for said transmission line test structure includes the steps of providing said single integrated circuit device with open-circuit impedance measuring circuitry coupled to one of said pair of said transmission line test structures; and providing said single integrated circuit device with short-circuit impedance measuring circuitry coupled to another of said pair of said transmission line test structures.

4. (currently amended) A method for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 1 includes the steps of providing a single transmission line test structure implemented at a package level and providing said single integrated circuit device with open-circuit and short-circuit termination circuitry coupled to said single transmission line test structure at said package level.

5. (original) A method for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 4 wherein the steps of measuring said input impedance with said open-circuit termination and said short-circuit termination for said transmission line test structure includes the steps of sequentially providing an open-circuit termination and a short-circuit termination to said

Serial No. 10/712,742

single transmission line test structure utilizing said open-circuit and short-circuit termination circuitry.

6. (original) A method for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 1 includes the steps of displaying a pass or fail result responsive to said compared values.

Claim 7. (canceled)

8. (currently amended) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in ~~claim 7~~ claim 14 wherein said transmission line test structure includes a pair of transmission line test structures respectively implemented at a package level with a open-circuit termination and a short-circuit termination.

9. (original) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in claim 8 wherein said impedance measuring circuitry includes an open-circuit impedance measuring circuitry coupled to one of said pair of transmission line test structures; and a short-circuit impedance measuring circuitry coupled to another of said pair of transmission line test structures.

10. (currently amended) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in ~~claim 7~~ claim 14 wherein said transmission line test structure includes a single transmission line test structure implemented at a package level and an open-circuit and short-circuit termination circuitry coupled to said single transmission line test structure.

11. (currently amended) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in ~~claim 7~~ claim 14 includes a display coupled to said logic circuitry for displaying a pass or fail result responsive to said compared values.

12. (currently amended) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in ~~claim 7~~ claim 14 wherein said characteristic impedance calculation circuitry calculates said characteristic impedance represented by:

$$Z_o = (Z_{sc} \cdot Z_{oc})^{1/2}$$

where  $Z_o$  represents said calculated characteristic impedance and  $Z_{oc}$  and  $Z_{sc}$  represent said input impedance measured values for said open-circuit termination and said short-circuit termination.

13. (currently amended) Apparatus for implementing automated electronic package transmission line characteristic impedance verification as recited in ~~claim 7~~ claim 14 wherein said logic circuitry compares said calculated characteristic impedance with threshold values for verifying acceptable electronic package transmission line characteristic impedance represented by:

$$Z_1 < Z_o < Z_2$$

where  $Z_o$  represents said calculated characteristic impedance and  $Z_1$ ,  $Z_2$  represent lower and upper threshold values for an electronic package characteristic impedance specification.

14. Apparatus for implementing automated electronic package transmission line characteristic impedance verification ~~as recited in claim 7 wherein~~ comprising:

a sinusoidal voltage source coupled to a transmission line test structure for generating a selected frequency;

impedance measuring circuitry coupled to said transmission line test structure for measuring an input impedance for an open-circuit termination and a short-circuit termination;

characteristic impedance calculation circuitry coupled to said impedance measuring circuitry for receiving said input impedance measured values with said open-circuit termination and said short-circuit termination for calculating characteristic impedance;

logic circuitry coupled to said characteristic impedance calculation circuitry for comparing said calculated characteristic impedance with threshold values for verifying acceptable electronic package transmission line characteristic impedance;

said sinusoidal voltage source, said impedance measuring circuitry, said characteristic impedance calculation circuitry, and said logic circuitry being implemented by a single integrated circuit device; and

said transmission line test structure represents conductors on a card and said single integrated circuit device is disposed on said card.

15. (canceled)

16. (currently amended) An electronic unit ~~as recited in claim 15 wherein~~ comprising:

Serial No. 10/712,742

a transmission line test structure; and

a single integrated circuit device for implementing automated electronic package transmission line characteristic impedance verification; said single integrated circuit device including:

a sinusoidal voltage source coupled to said transmission line test structure for generating a selected frequency;

impedance measuring circuitry coupled to said transmission line test structure for measuring an input impedance for an open-circuit termination and a short-circuit termination;

characteristic impedance calculation circuitry coupled to said impedance measuring circuitry for receiving said input impedance measured values with said open-circuit termination and said short-circuit termination for calculating characteristic impedance;

logic circuitry coupled to said characteristic impedance calculation circuitry for comparing said calculated characteristic impedance with threshold values for verifying acceptable electronic package transmission line characteristic impedance; and

said transmission line test structure represents conductors on a card and said single integrated circuit device is disposed on said card.

17. (currently amended) An electronic unit ~~as recited in claim 15 wherein~~ comprising:

a transmission line test structure; and

a single integrated circuit device for implementing automated electronic package

Serial No. 10/712,742

transmission line characteristic impedance verification; said single integrated circuit

device including:

a sinusoidal voltage source coupled to said transmission line test structure for  
generating a selected frequency;

impedance measuring circuitry coupled to said transmission line test structure for  
measuring an input impedance for an open-circuit termination and a short-circuit  
termination;

characteristic impedance calculation circuitry coupled to said impedance  
measuring circuitry for receiving said input impedance measured values with said open-  
circuit termination and said short-circuit termination for calculating characteristic  
impedance;

logic circuitry coupled to said characteristic impedance calculation circuitry for  
comparing said calculated characteristic impedance with threshold values for verifying  
acceptable electronic package transmission line characteristic impedance; and

said transmission line test structure represents conductors on a multi-chip  
module and said single integrated circuit device is included in said multi-chip module.